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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,941	11/14/2003	Yoshiaki Kaburagi	00862.023315	7416

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EXAMINER

MARTIN, LAURA E

ART UNIT PAPER NUMBER

2853

DATE MAILED: 09/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/706,941

Applicant(s)

KABURAGI, YOSHIAKI

Examiner

Laura E. Martin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/29/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The disclosure is objected to because of the following informalities: frequent misspellings, such as "printing-m dium" and "pass s" on page 16.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

Claims 1, 2, 3, 7, 8, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohde (US 2003/0095161) in view of Tsuchiya et al. (US 6761426) and Yu et al. (US 2002/0060707).

As per claim 1, Ohde teaches a printing apparatus (Fig 1) for performing printing on a printing medium (4) by reciprocally scanning (2; P4, L3) a carriage to which a printhead (1) having a plurality of printing elements (nozzle array P4, L12) is mounted, said printing being performed during constant-speed movement (carriage moves while printhead records (P33, L5-7) of the carriage, said apparatus comprising: a buffer storing print data (P16, L3) to be used in a printing operation for one scan (P33, L6); counting means (HV counter P55, L1) for counting at least a part of the print data (writable blocks P16, L9), stored in said buffer; comparison means (GA analysis control codes from stored Data 103; P39, L7-8) for comparing a counted value (P83, L7-8), counted by said counting means with a predetermined threshold value (specific value P84, L1-3); and control means (Fig 2). Ohde also teaches a control means to be used

in a printing operation for one scan of the carriage (P33, L6), based on a comparison result from said comparison means.

As per claim 2, Ohde teaches said counting means dividing said buffer into a plurality of areas (plural print buffers for writing the recording data on writable blocks P16, L11+), and among the divided plurality of areas (writable blocks), performs counting (counter retains values to designate the writable blocks Abs, L6+) on an area storing print data (writable blocks).

As per claim 3, Ohde discloses a DC motor (5) for driving the carriage; and a power source (P35, L4-5 "carriage motor 5 is driven" inherently requires a power source) for supplying electric power to the apparatus.

As per claim 7, Ohde teaches a printhead (1) that is an inkjet printhead, which performs printing by discharging ink (P31, L3); said inkjet printhead comprises an electrothermal (P36, L5) transducer (converting element) for generating heat energy (give ink heat P36, L4) to be applied to ink, so as to discharge ink (P36, L8-9) utilizing the heat energy.

Ohde does not teach printing during acceleration or control means to change the number of printing elements in a printhead to be used in a printing operation.

Tsuchiya et al. teaches printing during acceleration (C3, L60+).

It would have been obvious to one skilled in the art at the time of the invention to alter Ohde's teachings with the teachings of Tsuchiya et al. because printing during printhead acceleration allows for the construction of smaller, more portable printers.

Yu et al. teaches control means (42) to change the number of normal nozzles (40).

It would have been obvious to one skilled in the art at the time of the invention to alter Ohde's teachings with the teaching of Yu et al. because changing the number of nozzles allows the printhead to print at different densities.

As per claim 11, Ohde teaches a printing control method (P19, L1-2) adopted for performing printing (P19, L4-5) on a printing medium by reciprocally scanning (P32, L1-2) a carriage (2) to which a printhead (1) having a plurality of printing elements (P4, L12) is mounted, said printing being performed during constant speed movement (P33, L5-7) of the carriage, said method comprising: a storing step (P17, L2-3) of storing into a buffer print data to be used in a printing operation (P18, L8) for one scan; a counting step (S603) of counting at least a part of the print data, stored in the buffer (S604) in said storing step, which causes the printhead to perform a printing operation.; a comparison step (S607 compare numbers with predetermined) comparing a counted value, counted in said counting step with a predetermined threshold value.

As per claim 12, Ohde teaches a printing control method (P19, L1-2) adopted for performing printing (P19, L4-5) by reciprocally scanning (P32, L1-2) a carriage (2), to which a printhead (1) having a plurality of printing elements (P4, L12) is mounted, by driving force of a carriage motor (5), said printing being performed during constant speed movement (P33, L5-7), said method comprising: a storing step (P17, L2-3) of storing into a buffer print data to be used in a printing operation for one scan; a storing step (P17, L2-3) of storing into a buffer print data to be used in a printing operation for

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one scan; a counting step (P18, L8) of counting at least a part of the print data, stored in the buffer (S604) in said storing step, which causes the printhead to perform a printing operation; an acquisition step (P39, L4-5) of acquiring data regarding power consumption of the carriage motor; an addition step (HV counter counts 0-3 P55, L1-2) of adding the data regarding power consumption of the carriage motor acquired in said acquisition step to data regarding power consumption of the printhead which is obtained from a counted value counted in said counting step; a comparison step (S607) of comparing a value, obtained in said addition step, with a predetermined threshold value.

Ohde does not teach printing during acceleration or changing the number of printing elements of the printhead based on a comparison result.

Tsuchiya et al. teaches printing during acceleration (C3, L60+).

It would have been obvious to one skilled in the art at the time of the invention to alter Ohde's teachings with the teachings of Tsuchiya et al. because printing during printhead acceleration allows for the construction of smaller, more portable printers.

Yu et al. teaches a control step of controlling to change a number of printing elements of the printhead to be used in a printing operation for one scan of the carriage based on a comparison result of said comparison step (controlling device 42 selects number of normal nozzles 40 based on determining operating status – operating status must be compared with a standard to determine whether nozzle is properly working or malfunctioning P32, L4+)

It would have been obvious to one skilled in the art at the time of the invention to alter Ohde's teachings with the teaching of Yu et al. because changing the number of nozzles allows the printhead to print at different densities.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohde, Tsuchiya et al. and Yu et al. as applied to claim 1 above in view of Numata et al. (US 5617122).

As per claim 4, Ohde teaches the number of printing elements (nozzle array P4, L12) of the printhead (1) to be used in a printing operation P33, L6 for one scan of the carriage.

Ohde does not teach the apparatus satisfying a condition such that the sum of a driving current required for driving said number of printing elements and a driving current supplied to the DC motor for accelerating the carriage is equal or lower than a capacity of the power source.

Numata et al. teaches the apparatus satisfying a condition such that the sum of a driving current required for driving said number of printing elements and a driving current supplied to the DC motor for accelerating the carriage is equal or lower than a capacity of the power source. (Abs, L16+; the controller can determine the temperature reading, if it exceeds a certain value, the driving frequency will be reduced. The Power supply for printhead 501-504 to recording head and drive controller 510 must be less than the threshold value set on power so that the carriage consumes less than the capacity of the printer.)

It would have been obvious to one skilled in the art at the time of the invention to alter that taught by Ohde, Tsuchiya et al., and Yu et al. with that taught by Numata et al. because a current less than the capacity of the power source allows the machine to run properly.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohde, Tsuchiya et al. and Yu et al. as applied to claim 1 above in view of Anzai (US 6719396) and Numata et al. (US 5617122), and in further view of Yanagisawa et al. (US 5690437).

Yanagisawa et al. teaches determining means for determining whether or not the power source (C7, L30-33) is an AC power source 26 or a battery power source 27, and wherein, in a case where it is determined by said determining means that the power source is a battery power source, controlling is performed by said control means (cartridge determined from signals C7, L40-42). Applicant does not state that the determining means determines that the power source is only a battery power source, which allows for the controlling to be performed when the power source is AC or battery operated).

It would have been obvious to one skilled in the art at the time of the invention to alter that taught by Ohde, Tsuchiya et al., Yu et al., and Numata et al. with that taught by Yanagisawa et al. because in order for controlling to be performed, the apparatus must have a power source.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohde in view of Tsuchiya et al. and Yu et al. as applied to claim 1 above, and further in view of Nakayama et al. (US 6896345).

Nakayama et al. teaches control means controls to perform multipass printing (C2, L17+).

It would have been obvious to one skilled in the art at the time of the invention to alter that taught by Ohde, Tsuchiya et al., and Yu et al. with that of Nakayama et al. because multipass printing allows for a higher quality image to be printed.

Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohde (US 2003/0095161) in view of Matsumoto et al. (US 2001/0055042) and Yu et al. (US 2002/0060707).

As per claims 9 and 10, Ohde teaches a printing apparatus (Fig 1) for performing printing on a printing medium (4) by reciprocally scanning a carriage (2), to which a printhead (1) having a plurality of printing elements (nozzle array P4, L12) is mounted, by driving force of a carriage motor (5), said printing being performed during constant speed movement (P33, L5-7) of the carriage, said apparatus comprising: a buffer (P16, L3) storing print data to be used in a printing operation for one scan (P33, L6); counting means (HV counter P55, L4) for counting at least part of the print data (writable blocks P16, L9) stored in said buffer (P16, L3); acquisition means (I/F block receives data from host P39, L4-5) for acquiring data regarding power consumption of the carriage motor; addition means (HV counter P55, L4) for adding the data which is obtained from a counted value counted by said counting means (P55, L4); comparison means for

comparing a value (103, GA analysis control codes from stored data P39, L7-8), obtained by said addition means, with a predetermined threshold value (specific value (P84, L1-3); and control means (Fig 2) for controlling based on a comparison result (GA 103) of said comparison means.

Ohde does not teach adding data regarding power consumption or controlling to change the number of printing elements of the printhead used in a printing operation. Ohde also does not teach comparison means changing the predetermined threshold value in accordance with a moving direction of the carriage.

Matsumoto et al. teaches adding data regarding power consumption (system controller 31 counts the number of pulses from pulse generator and determines the feeding amount per unit time – amount motor moves paper – and determines the timing of driving the recording sheet P53, L3+). Matsumoto also teaches comparison means changing the predetermined threshold value in accordance with a moving direction of the carriage (check dot trains 103a and 103b inspected by sensor 104; 1 nozzle subgroup designated failing; failing nozzles can be designated by use of a different threshold value P96, L12+).

It would have been obvious to one skilled in the art at the time of the invention to alter Ohde's teachings with those of Matsumoto et al. because adding data regarding power consumption allows for an accurate determination of timing and location of the recording sheet.

Yu et al. teaches control means (42) to change the number of normal nozzles (40).

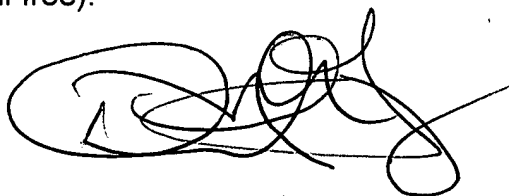
It would have been obvious to one skilled in the art at the time of the invention to alter Ohde's teachings with the teaching of Yu et al. because changing the number of nozzles allows the printhead to print at different densities.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura E. Martin whose telephone number is (571) 272-2160. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David M. Gray can be reached on (571) 272-2119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Laura E. Martin

A handwritten signature in black ink, appearing to read 'David Gray', with a large, stylized flourish extending from the end of the signature.

David Gray
Primary Examiner